THE SEARCH FOR ENVIRONMENTAL QUALITY[1]

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The literature of the day is replete with dire warnings concerning impending doom in the quality of our environmental resources. There are excellent scientific studies which treat these concerns in an objective manner. *Bio-Science*, *Science*, *Ecology*, reports of the President's Science Advisory Committee, certain symposia of the American Association for the Advancement of Science, and a series of monographic texts and books are only examples of the literature dealing in depth with this subject. Additionally, at least two periodicals, exclusively concerned with environment and aimed at the lay citizen, have appeared, and a third, *Environmental Monthly*, was announced just recently. This literature is undoubtedly familiar to most scientists and need not be further elaborated.

Concern with the quality of our environment, thus, is no longer restricted to academic circles. It is becoming a national concern which reaches into every segment of the population. A recent Gallup poll conducted under the auspices of the National Wildlife Federation reported that at least half of the interviewees were deeply concerned about the effects of air pollution, water pollution, soil erosion, and wildlife destruction; about a third said they were somewhat concerned; and only twelve percent said they were not very concerned. Surprisingly, three out of four said they would be willing to pay additional taxes earmarked for conservation. It also is of interest that only six percent of those polled said that they preferred to live in large cities, this despite the fact that over seventy percent of our population now lives in urban complexes.

It is apparent, then, that concern with environment has become a nationally celebrated cause. In the process of becoming such a cause, however, there is evidence that basic economic and scientific facts are in danger of being obscured by the related prejudices and stimulated emotions. Our position on environmental quality is ambivalent, as I will attempt to demonstrate.

What is meant, by us as individuals or by us as a nation, when we speak of a quality environment? Is it a return to the pristine character of our streams and rivers, recognizing that, before the advent of man, many of them were oft times muddy and sometimes menacing in flood times? Is it the great stretches of awesome forests that caused early travelers to despair of reaching their destination when they plodded at less than 20 miles a day through the mire of lowlands and the hazards of fallen monarchs? Is it the haze that hung over the prairies from the fires set by the aborigines to bring game to the bow? Is it the codling-moth larvae that were exposed in their bashful pink when one bit into an apple carefully selected from the top of the barrel in the country market? Or is it solitude, the chance to be alone without having to pull the shades at night or hearing the noise of the streets? Is it the sights and smells of the open country: the delicate aroma of the black locust in bloom, of fresh-cut clover, of fresh barnyard manure? The wild call of the upland plover in April? The beep of the woodcock? The honk of the Canada goose?

Or is it freedom from the drudgery of the physical labor and the discordant sounds and unpleasant smells that marked our lot before technology brought the comforts of modern living? Some of these sounds and smells still linger in the minds of many who arose at four in the morning to the clatter of an old-fashioned Big Ben and cleaned the gutters behind a herd of Holsteins with profound capacity

[1]This paper was presented by Dr. Dambach at the meetings of the Conservation Section of The Ohio Academy of Science at Delaware in 1969. It is presented here (in slightly modified form), partly because of its perceptiveness and meaningfulness, especially in light of modern environmental concerns, and partly in tribute to one of Ohio's great and deeply beloved leaders in the area of conservation and natural resources.

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for evacuation throughout the night and unerring accuracy with a urine-saturated tail.

No, this is what we as a nation have sought to escape and what millions the world over are still trying to escape from as they flock to the cities in search of economic security, security from burdensome labor, and an opportunity to share in the excitement of the multitudes and to enjoy the creature comforts of urban life. Now that these goals have been achieved in some measure, we would like to skim from the past that which was pleasant and leave the unpleasant but a memory. So, we return to the countryside, not in ones and twos but in droves, to recapture the essence of the country life, to smell the fresh air, to be inspired by awesome scenery, and to be away from it all for a little while. We do this, however, with the certainty that a 180-horsepower engine in a sleek car on a well-paved road, or a thundering jet airliner, will get us back to our suburban homes, our highrise apartments, and our urban comforts in time to punch the clock in our air-conditioned factories and offices. Even the most vocal protagonists for wilderness, for clean streams, and for clean air join in this dualism.

We do this because we want to, because we can, because our efficiency and our technological capacity allow the time to do it, the income to afford it, and the automobiles, the highways, and the airplanes that make it possible. And we fret because we don't find the environment as it was or at least as we remember it or as we wish it were. Even as a nation we are frustrated because the environment in which we seek to escape is impaired by the necessity of sustaining us in our urban base.

These frustrations are manifested in many ways. We have campaigns to build dams for flood control to protect our cities, and we have campaigns to prevent dams from being built to preserve scenic beauty. We have campaigns to rid streams of industrial pollution, and we have campaigns to attract more industries to our cities. We decry pollution of Lake Erie on page one of our large city dailies and describe the lake as the freshwater sport-fishing capitol of the world on the sports pages. We have campaigns to rid ourselves of moquitoes and flies, and we have campaigns to outlaw certain insecticides which keep the mosquitoes under control. We have campaigns to build new parks, and we have campaigns to prohibit the acquisition of new lands for parks. We have campaigns to get rid of sulphur dioxide formed from combustion of hydrocarbons in the production of electricity, and we have campaigns to prevent installation of atomic-powered electric generating plants which would eliminate the need to use sulfur-producing fuels.

Some people call this the environmental crisis. Stewart Udall called it the quiet crisis. But it is no longer a quiet crisis. The evidence that the environment is not like it was is too apparent to be hidden from a mobile and erudite population. And there is loud protest. However, I fear the protest is too often biased and inflammatory and does not appeal to reason and, as a consequence, does not attract solid support of important decision-makers. For example, we are told that Lake Erie is dead. Pollution of Lake Erie is indeed a serious problem, but the odds are that thousands of pleasure craft will continue to ply this lake, that fishermen will continue to catch millions of pounds of fish, and that bathers will flock to the unpolluted beaches in droves for many years to come. Elsewhere are found multitudinous predictions of the exhaustion of any one of several of our natural resources. Since the world appears to be making out better than ever in a physical sense, skepticism is rampant, while some recent developments raise doubts about that approaching calamity. Through all this there is evident, among concerned non-scientists, a profound faith that, through science, will come answers to all our ills.

What is the answer? I believe we need a rational approach to the environmental crisis, one which assesses in an objective manner the alternatives open to

man, one which is based on fact verified by careful research. We also need new scientific understanding to cope with the problems created by our past science-produced technology; there is no other choice. If we give up DDT, and I think we must, we must develop dependable substitutes for it. If we wish to provide everyone who wishes to do so with an opportunity to enjoy the wilderness, we must find ways to do it without destroying the wilderness itself. If we wish everyone to have equal opportunity to enjoy the pleasures of fishing and hiking and hunting, we must find ways to increase the population of fish and other forms of wildlife in the waters and lands they occupy and to prevent their destruction by human-induced technology. If we must accommodate increasing number of people, it must be in housing that is not subject to flooding or to landslides. If we want to maintain modern transportation without air pollution, we must develop non-air-polluting vehicles and fuels.

Finding such solutions requires a high order of research in a variety of disciplines and a high degree of interdisciplinary research effort. The Ohio State University School of Natural Resources is founded on such a philosophy of interdisciplinary research, with a responsibility to help train scientists both through its own programs and through cooperation with other disciplines, scientists who will focus their attention on environmental problems through a mutually cooperative approach. The modern forest manager must be a sophisticated management specialist, who manages the forest for its many values—timber, watershed protection, wildlife, recreation, scenic values, air cleansing, etc. The successful wildlife manager, grounded in basic biology, conversant with wildlife management technology, and skillful in working with people, must be able to use the knowledge of the biologist, the chemist, the physicist, the engineer, and the economist in shaping wildlife programs adequate to meet environmental needs.

Despite these educational approaches, important as they are, a population adequate in number and overpowering in its technological capacity to impair the total environment is here now. And this population is increasing at staggering rates. Thus there is little evidence that we will demand less of the world's productive capacity, but rather that we will want to increase it to provide a still greater margin of comfort and economic security. But we are also demanding that at the same time, while destroying part of our natural environment, that same environment be cleaned up, and that it not be further impaired. This seeming contradiction poses difficult questions for the scientist, the resource manager, the philosopher, the educator, and especially for the concerned layman. It requires the best in all of them to produce a rational, meaningful solution.

It has often been said that conservation is not a discipline, but a way of life, a way of doing things, a point of view, a guide to rational action for the common good. It can be so to an effective degree only when it is the common will of the concerned citizens of the community, the state, the nation, and the world. However, the solution is not a return to nature as it used to be, or a cutting back in the use of goods needed to make man's lot easier. The rising expectations of millions the world over will, even without further population increases, result in greater demand for the use of resources and in concomitant waste production.

Just to define what our true environmental goals are is an enormous task, as we are witnessing in the national effort to establish air- and water-quality standards. And there is abundant evidence that the goals we have established fall far short of what many are advocating as being the essential components of a quality environment. We, and especially those of us who are both scientists and educators, must therefore produce a citizenry which can realistically define these goals and express them through the ballot box. It must be a knowledgeable citizenry, willing to pay the price and to assess all of the costs, so that our future environment will provide a satisfying, meaningful place in which to live.